Fig. 1

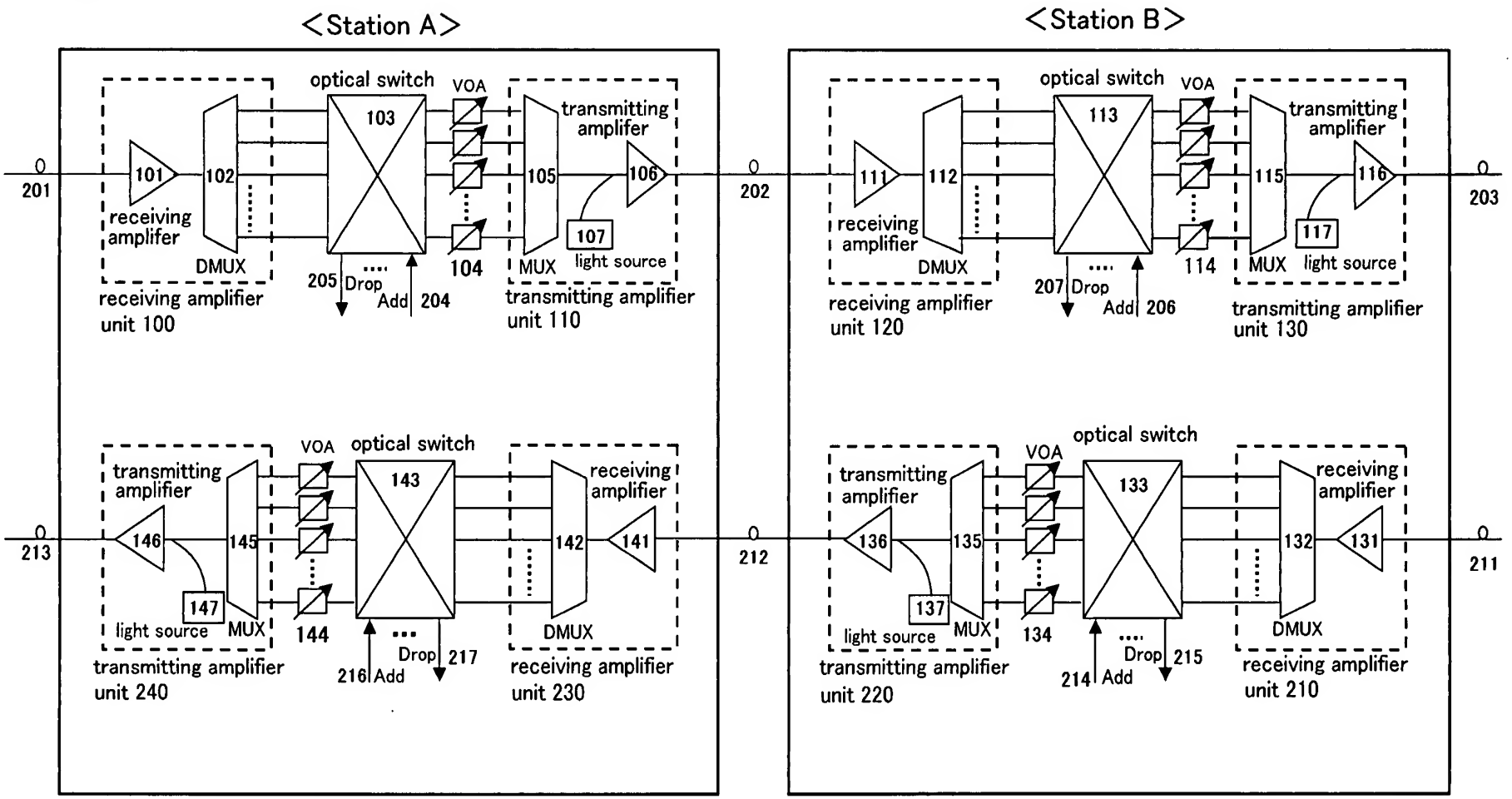
<Station A>
<Station B>
optical switch
VOA
transmitting amplifer
receiving amplifer
DMUX
MUX
light source
Drop
Add
receiving amplifier unit 100
transmitting amplifier unit 110
receiving amplifier unit 120
transmitting amplifier unit 130
transmitting amplifier unit 240
receiving amplifier unit 230
transmitting amplifier unit 220
receiving amplifier unit 210
201
202
203
211
212
213
101
102
103
104
105
106
107
111
112
113
114
115
116
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Fig. 2

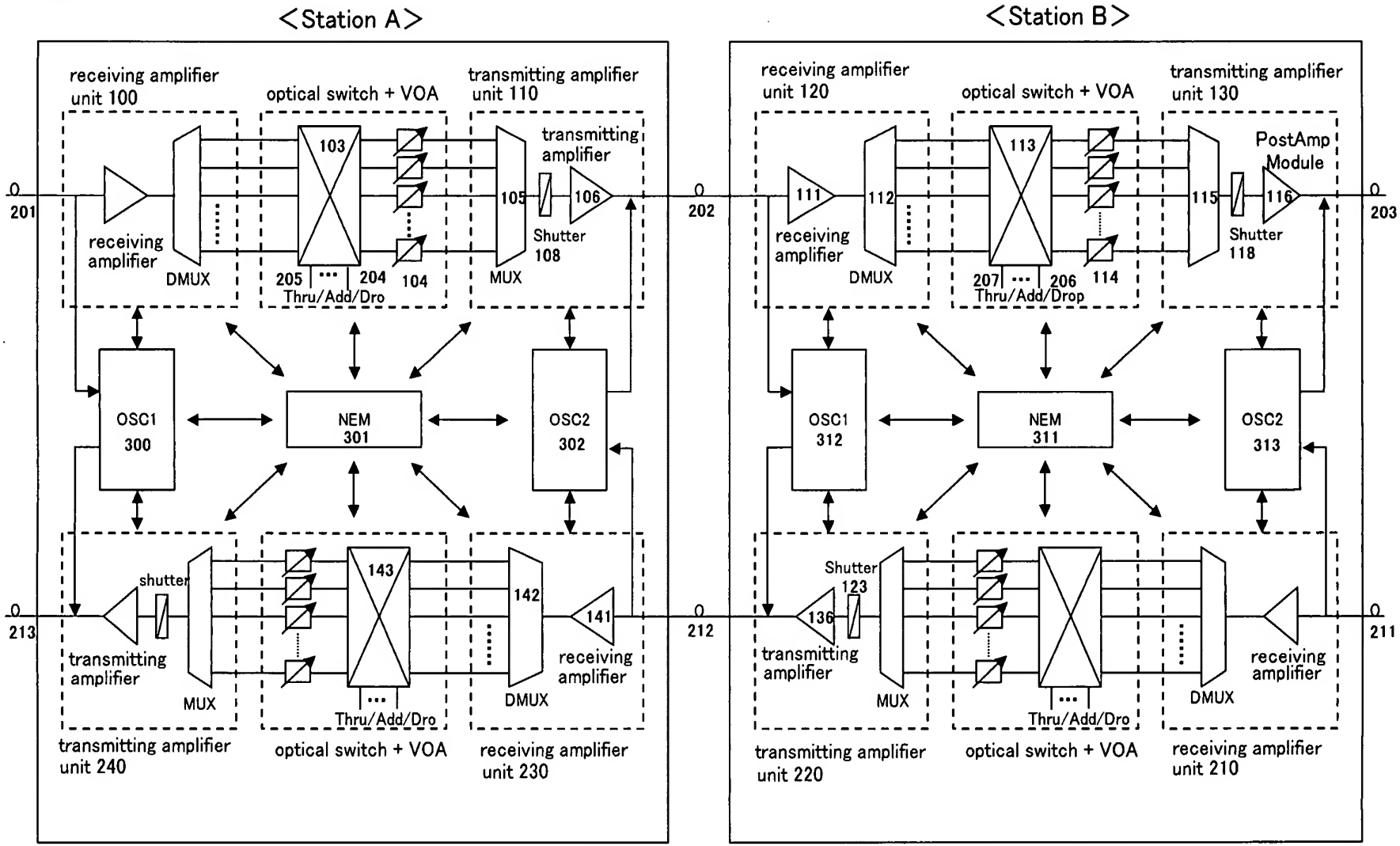

<Station A>
<Station B>
receiving amplifier unit 100
optical switch + VOA
transmitting amplifier unit 110
receiving amplifier unit 120
optical switch + VOA
transmitting amplifier unit 130
receiving amplifier
DMUX
MUX
Shutter 108
Shutter 118
PostAmp Module
Thru/Add/Dro
Thru/Add/Drop
OSC1 300
NEM 301
OSC2 302
OSC1 312
NEM 311
OSC2 313
shutter
Shutter 123
transmitting amplifier
transmitting amplifier unit 240
optical switch + VOA
receiving amplifier unit 230
transmitting amplifier unit 220
optical switch + VOA
receiving amplifier unit 210
201
202
203
211
212
213

Fig. 3

Gain setting sequence in case of PreAmp_Unit power on

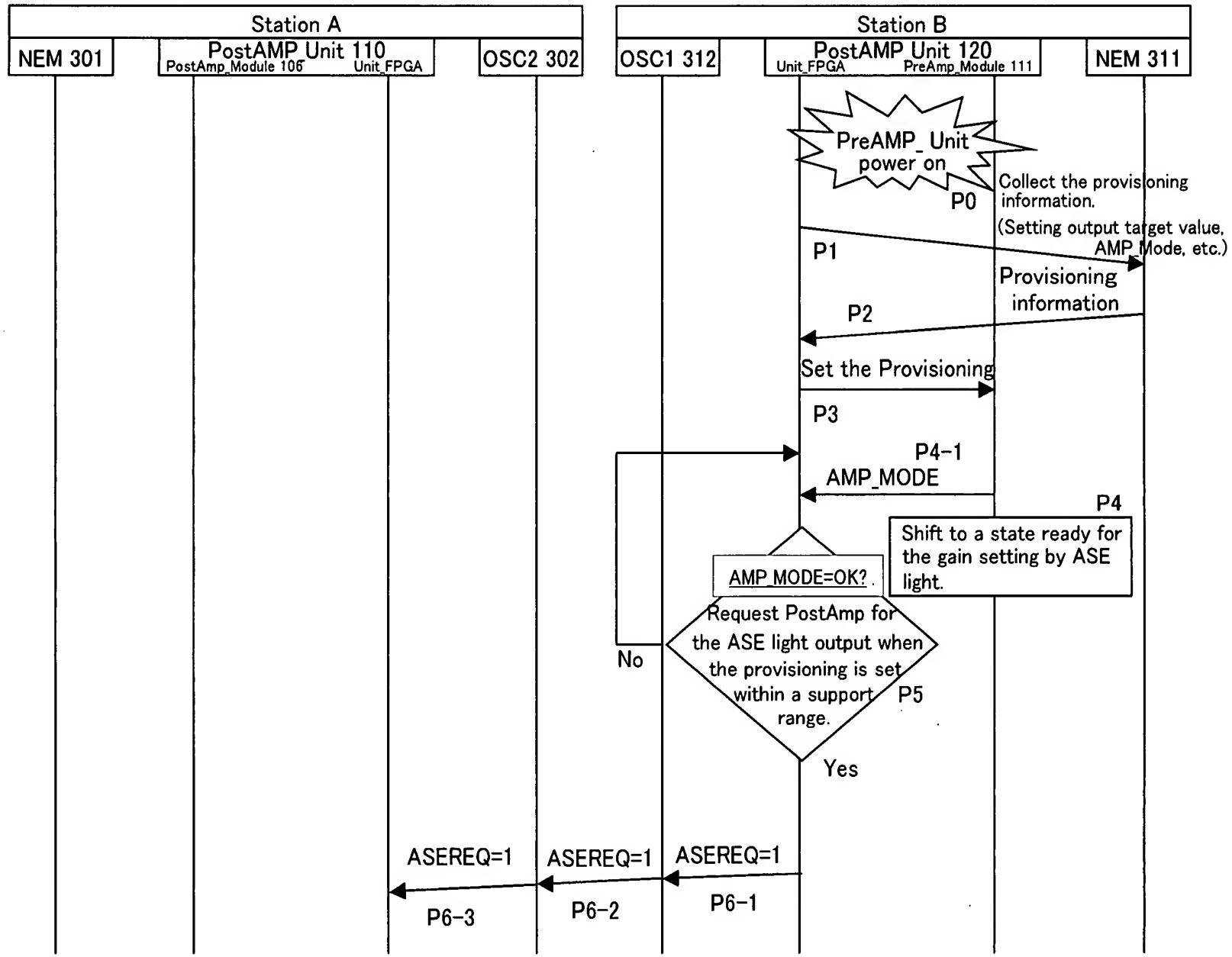


Fig. 4

Gain setting sequence in case of PreAmp_Unit power on

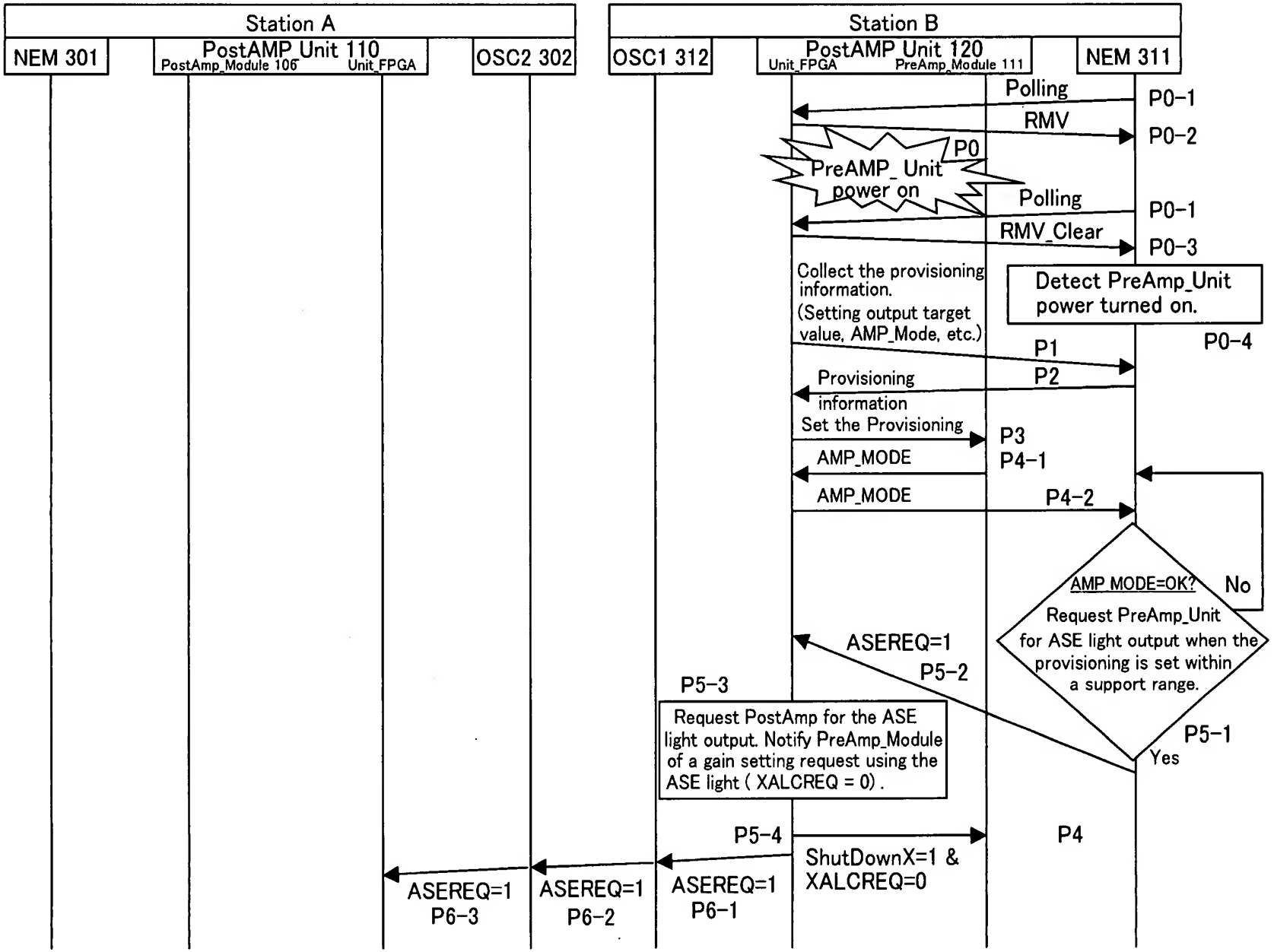


Fig. 5

PreAmp gain setting sequence in case of the fiber restoration

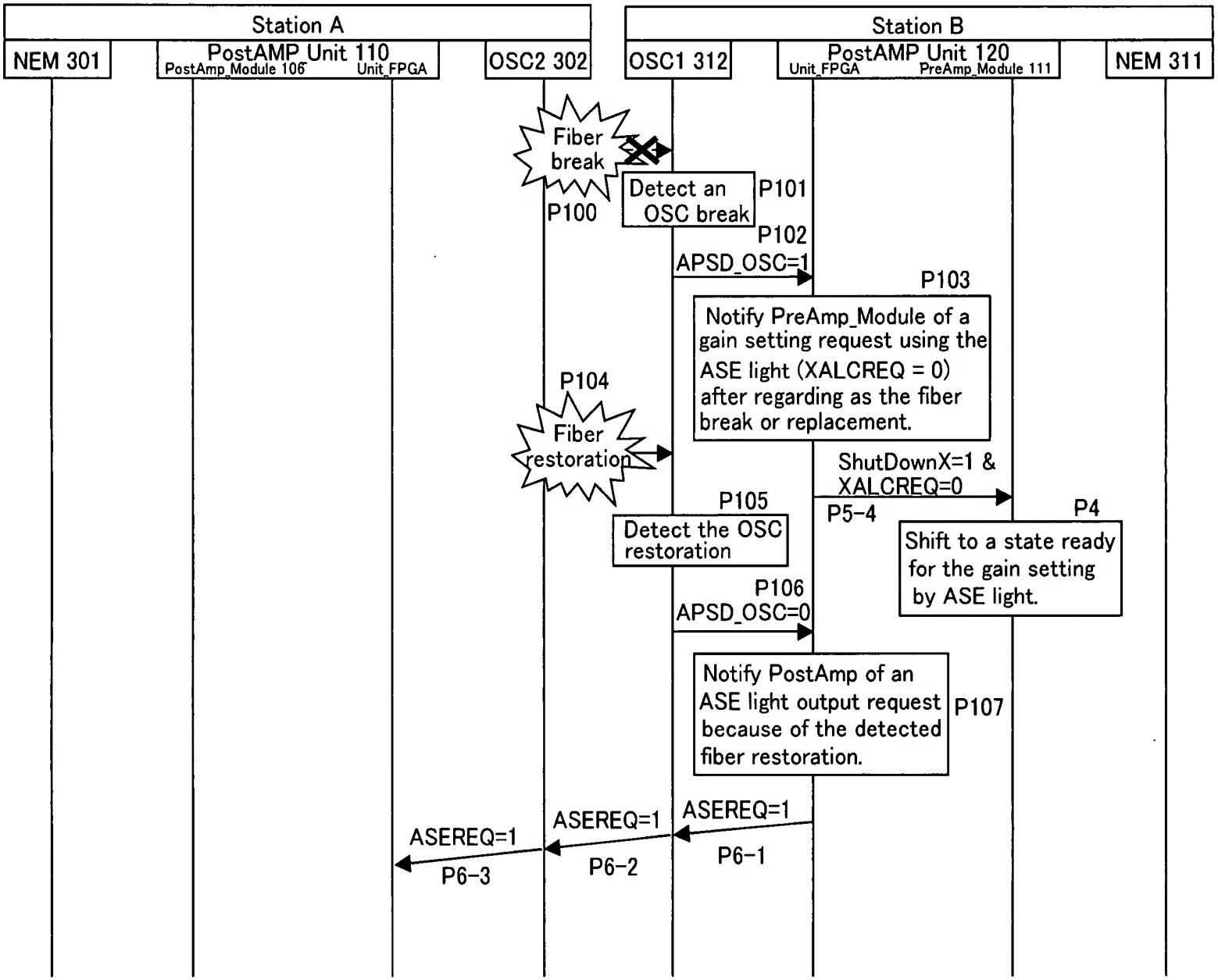


Fig. 6

PreAmp gain setting sequence in case of the fiber restoration

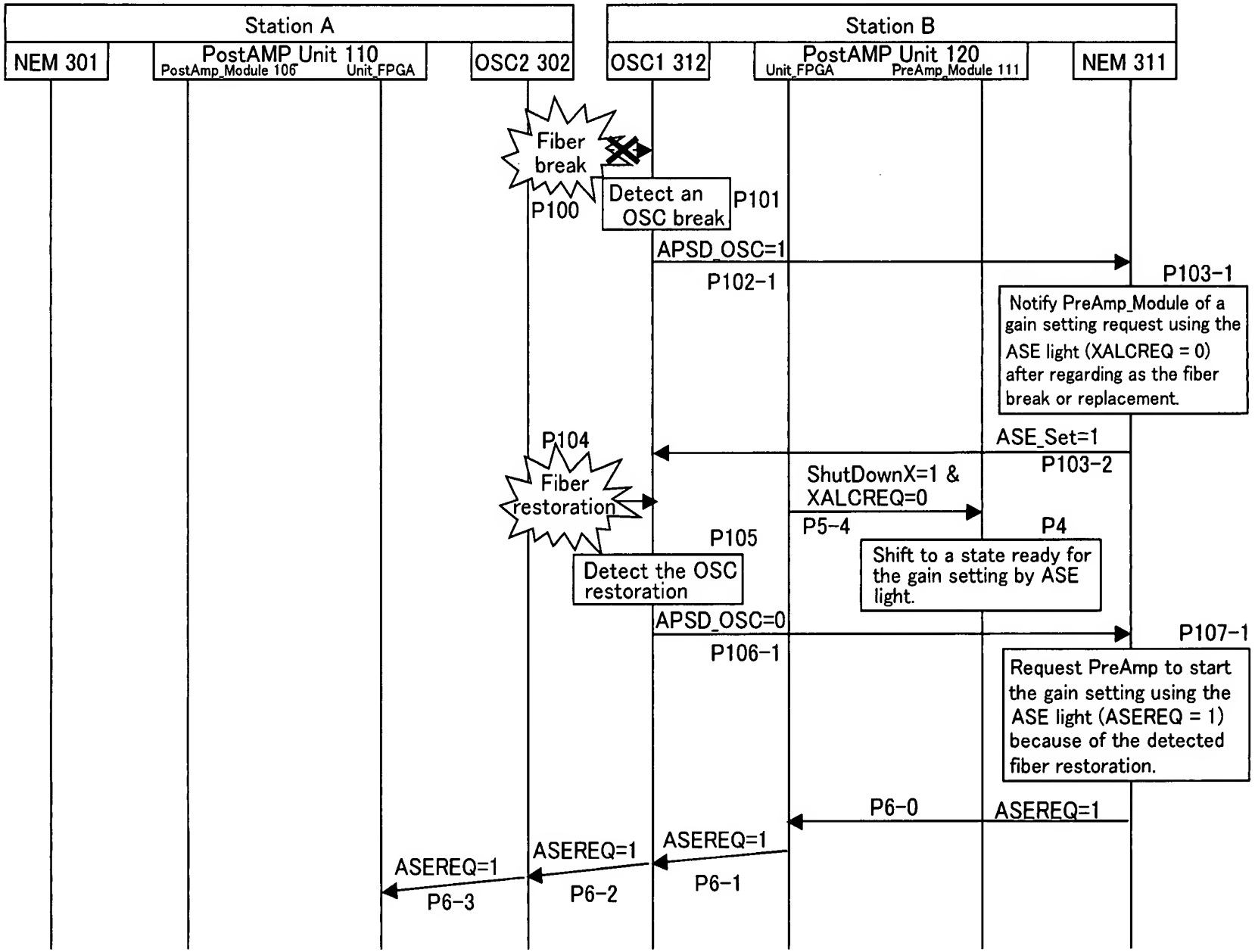


Fig. 7

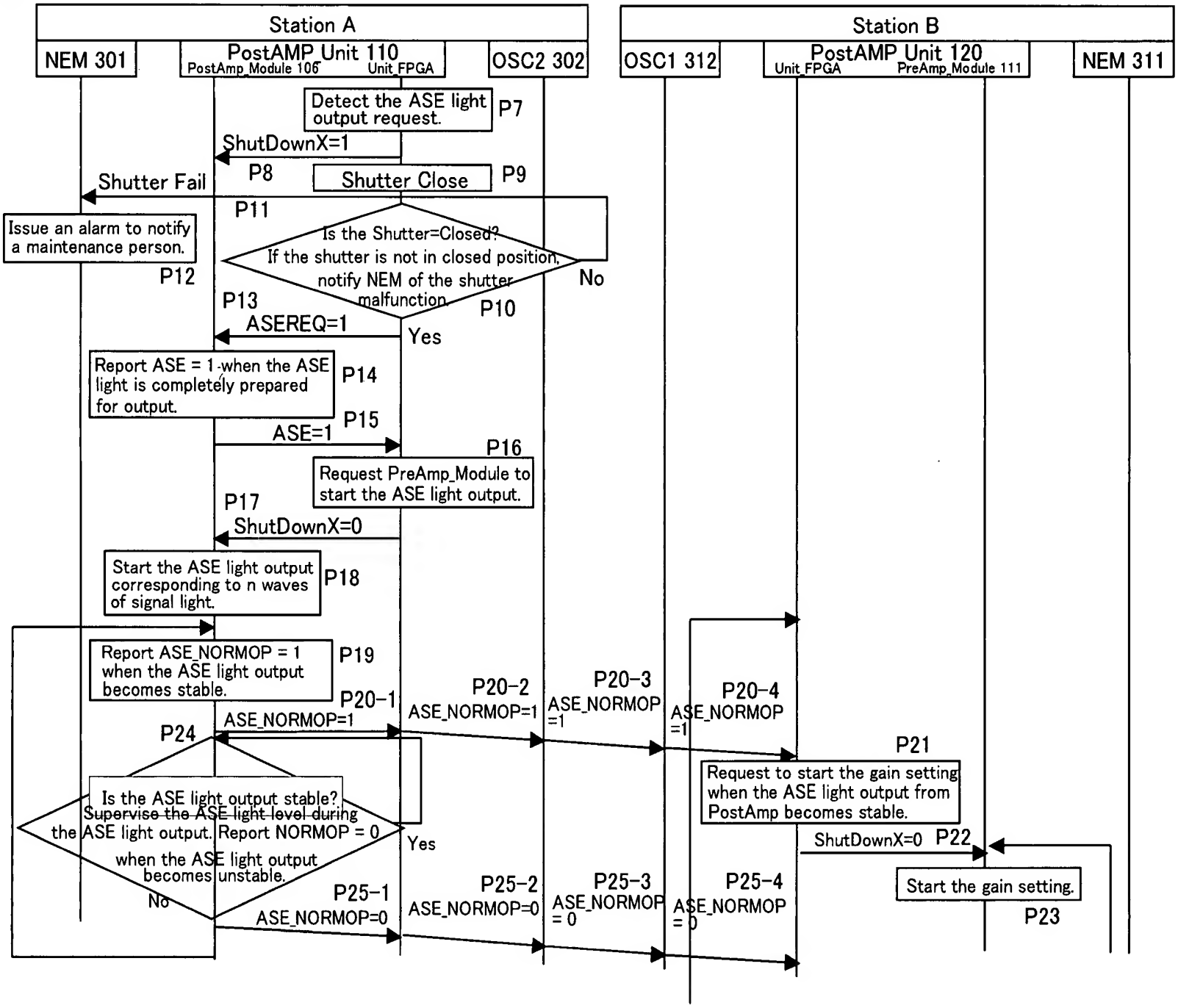

Station A
NEM 301
PostAMP Unit 110
PostAmp_Module 106
Unit_FPGA
OSC2 302
Station B
OSC1 312
PostAMP Unit 120
Unit_FPGA
PreAmp_Module 111
NEM 311
Detect the ASE light output request.
P7
ShutDownX=1
P8
Shutter Close
P9
Shutter Fail
P11
Issue an alarm to notify a maintenance person.
P12
Is the Shutter=Closed? If the shutter is not in closed position, notify NEM of the shutter malfunction.
P10
No
P13
ASEREQ=1
Yes
Report ASE = 1 when the ASE light is completely prepared for output.
P14
P15
ASE=1
P16
Request PreAmp_Module to start the ASE light output.
P17
ShutDownX=0
Start the ASE light output corresponding to n waves of signal light.
P18
Report ASE_NORMOP = 1 when the ASE light output becomes stable.
P19
P20-1
ASE_NORMOP=1
P20-2
ASE_NORMOP=1
P20-3
ASE_NORMOP =1
P20-4
ASE_NORMOP =1
P24
Is the ASE light output stable? Supervise the ASE light level during the ASE light output. Report NORMOP = 0 when the ASE light output becomes unstable.
Yes
No
P21
Request to start the gain setting when the ASE light output from PostAmp becomes stable.
ShutDownX=0
P22
Start the gain setting.
P23
P25-1
ASE_NORMOP=0
P25-2
ASE_NORMOP=0
P25-3
ASE_NORMOP = 0
P25-4
ASE_NORMOP = 0

Fig. 8

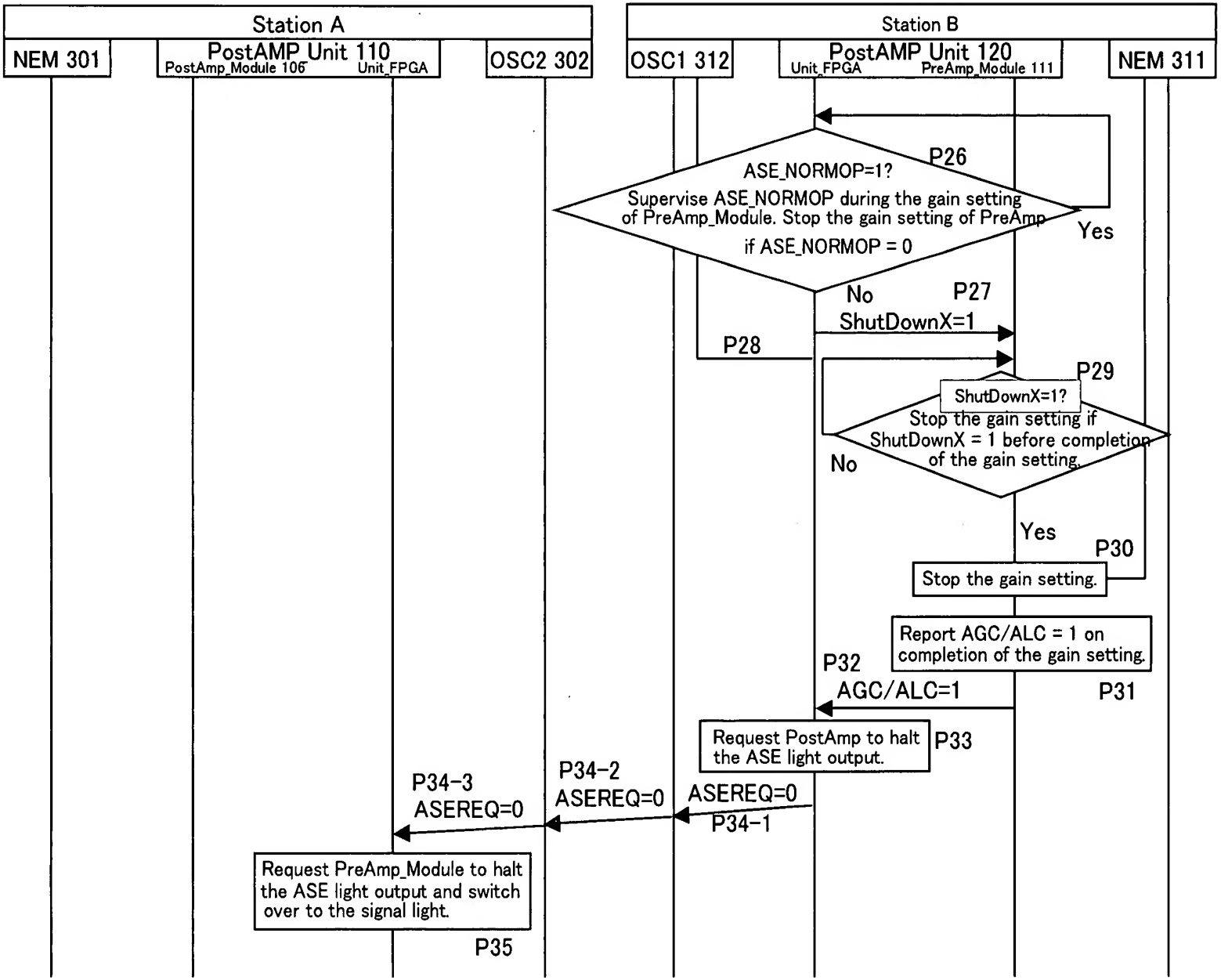

Station A
NEM 301
PostAMP Unit 110
PostAmp_Module 106
Unit_FPGA
OSC2 302
Station B
OSC1 312
PostAMP Unit 120
Unit_FPGA
PreAmp_Module 111
NEM 311
P26
ASE_NORMOP=1?
Supervise ASE_NORMOP during the gain setting of PreAmp_Module. Stop the gain setting of PreAmp if ASE_NORMOP = 0
Yes
No
P27
ShutDownX=1
P28
P29
ShutDownX=1?
Stop the gain setting if ShutDownX = 1 before completion of the gain setting.
No
Yes
P30
Stop the gain setting.
Report AGC/ALC = 1 on completion of the gain setting.
P31
P32
AGC/ALC=1
Request PostAmp to halt the ASE light output.
P33
P34-3
ASEREQ=0
P34-2
ASEREQ=0
ASEREQ=0
P34-1
Request PreAmp_Module to halt the ASE light output and switch over to the signal light.
P35

Fig. 9

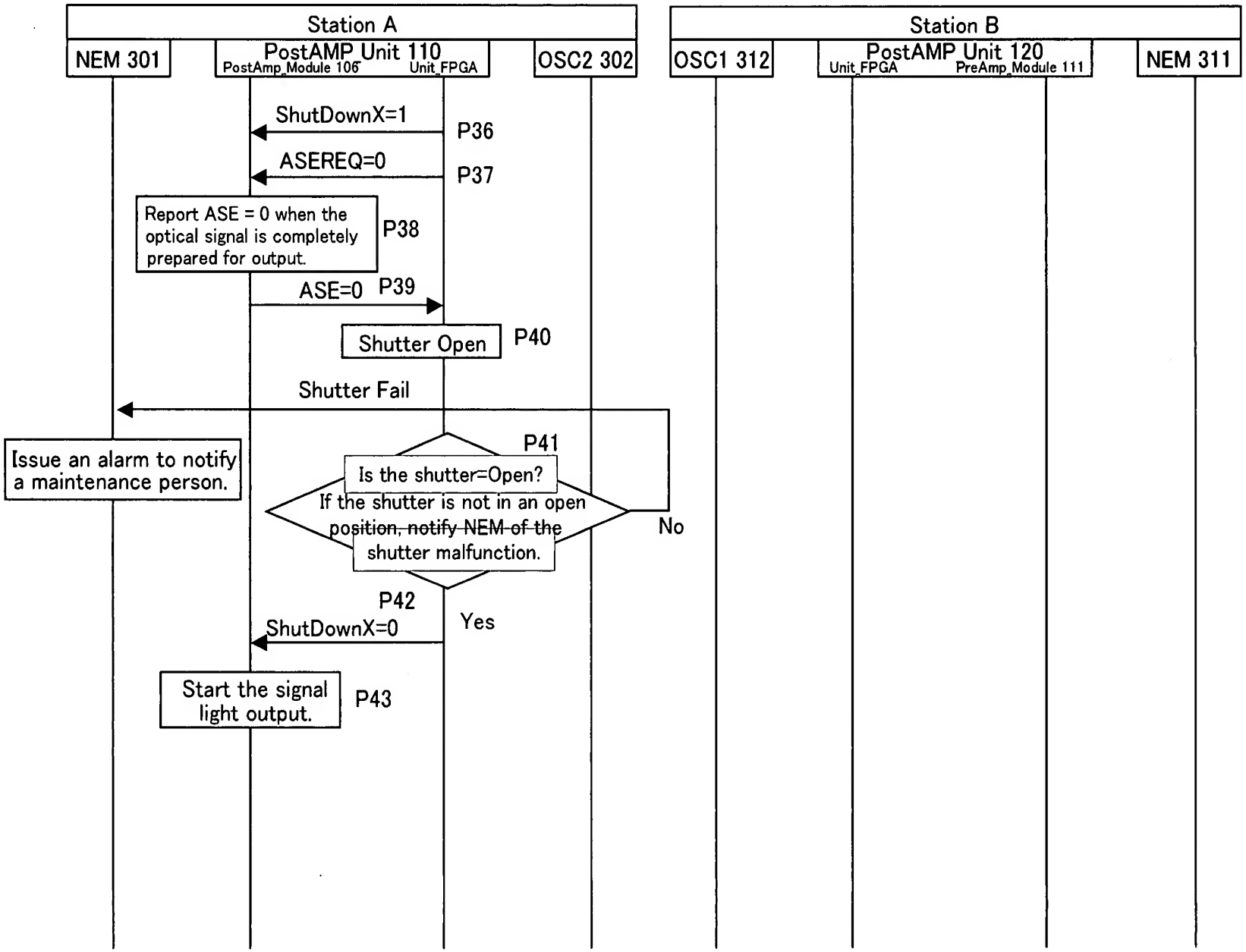

Station A
NEM 301
PostAMP Unit 110
PostAmp_Module 106
Unit_FPGA
OSC2 302
Station B
OSC1 312
PostAMP Unit 120
Unit_FPGA
PreAmp_Module 111
NEM 311
ShutDownX=1
P36
ASEREQ=0
P37
Report ASE = 0 when the optical signal is completely prepared for output.
P38
ASE=0
P39
Shutter Open
P40
Shutter Fail
Issue an alarm to notify a maintenance person.
P41
Is the shutter=Open?
If the shutter is not in an open position, notify NEM of the shutter malfunction.
No
P42
Yes
ShutDownX=0
Start the signal light output.
P43

Fig. 10

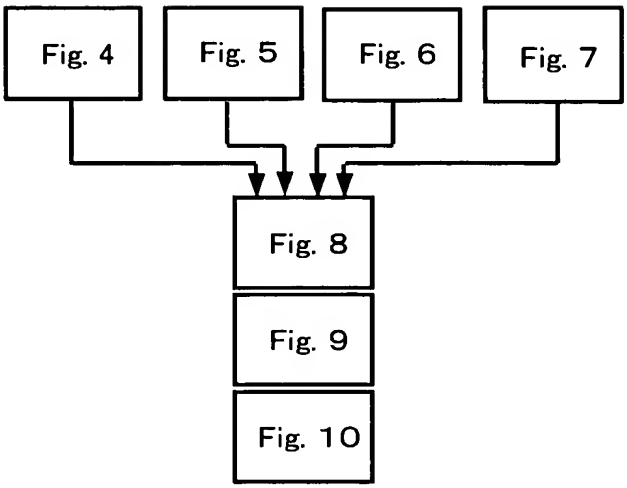
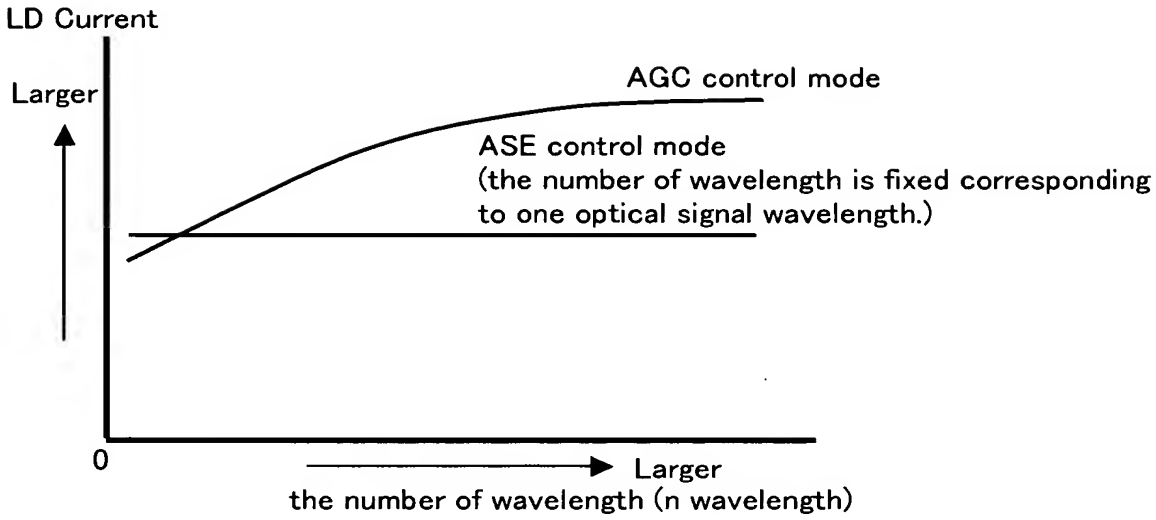


Fig. 11



Comparison chart of the LD Currents in the AGC mode and the ASE mode